Table of Contents

INTRODUCTION

DRAW/BAS is by no means a comprehensive program for designing high resolution graphics on the TRS-80. However, it does have several features which make it a good addition for those with a high resolution board. First is the cost. It is absolutely free. If you want to send me a donation, that is fine, but I am not asking you to do so. The other feature which makes this program of value is the ability for you to put text on the graphics screen using DotWriter {1} fonts, provided that you own some of them.

BACKGROUND

Being a college student, it took me quite a while to save up enough money to purchase a high resolution graphics board. After I bought the board, I couldn't really afford to buy the drawing program to go with it. Being a fairly decent programmer, I set out to write my own drawing program. I chose to write it in BASIC because I really didn't want to take the time to write assembly language routines for several of the features. (Like the trig functions needed for drawing circles and such.) So the program is really very simple in nature. The PRO-DRAW {2} program got around this problem by actually loading BASIC into memory and using it's routines, thus saving the author

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1. DotWriter is a Trademark of W.K. Mason. DotWriter is sold by ProSoft.
2. PRO-DRAW is sold by Micro Labs.

By Scott McBurney

of the program from a terrible fate. (trigonometry in assembly language)

What I really recommend if you are planning on doing a lot of drawing, and want to put DotWriter fonts on the graphics screen, is to purchase PRO-DRAW, draw your picture or whatever, then use this program to add in the text from DotWriter. Because it is written in BASIC, it is really too slow for any serious work.

FUNCTIONS

This program only supports a minimal amount of functions. They include drawing boxes, circles, lines, filling areas, block moves, and text entry. This program was never meant to be much, so it doesn't really do much. You are totally welcome to make any additions you may need to the program. If they work good, send them to me and I will add them in.

CURSOR MOVEMENT

Now for the nitty gritty. When the program starts, it will CLEAR the graphics screen. If you want to edit the current screen, then save it in a file first. After the screen clears, you might see it draw something in the upper left corner. It is just drawing some shapes which it uses.

The cursor is a white arrow, which will start in the center of the screen. Trust me, you can't miss it. The arrow always points up and to the left. The current point on the screen is the point of the arrow. Therefore, if you put the current point on the rightmost column of the screen, most of the arrow will actually show up on the left side of the screen. This is true for the bottom of the screen also. (I know, it could get confusing. Just remember, this is free.)

Now that you know what the cursor is, you need to know how to move it. This is the easy part. The arrow keys will move the cursor in any direction one point. (Sorry folks, no diagonal movement.) Since it would take about half an hour to move the cursor across the screen at this rate, there are several other ways to do it.

You can move the cursor around the screen by 5 to 8 dots at a time by holding down SHIFT and pressing an arrow key. This is much quicker and probably the easiest way to get around. But if you need to get all the way across the screen, it still takes time.

The last form of cursor movement it simple. Press CLEAR and an arrow key and the cursor will be moved to the farthest point possible in that direction. For example, if you want to go to the upper left corner of the screen, hold down CLEAR and press the up arrow and the left arrow.

POINTS

As you (hopefully) know, the graphics screen is 640 points across and 240 down, and each point can be on or off. The most simple way of changing a point's color is to put the point of the cursor on it and press ENTER.

This will compliment the current point, change it from black to white or white to black.   The only problem with this is that the points are very small (try it on a model 4p!) and it is sometimes hard to get the cursor on the exact point you want.   (This is where Zoom comes in handy on PRO-DRAW.)

LINES

To draw a line on the screen, move the cursor to the point at which you wish the line to start.   Now press the L key.   (Don't press ENTER unless you are told!) You should see the cursor turn into a short diagonal line. Now, if you use the cursor control keys, you can move the end of that line to where ever you want.   Notice that the line is sort of flashing to let you know it is there.

To put the line there permanently, you have 3 options. One, to Set the line, or draw a white line, press S. Two, to Reset the line, or draw a black line, press R. Three, to compliment every point on the line, press C.   If you change your mind, press the SPACE bar and you get your cursor back.

Remember how to Set, Reset, and Compliment because several

of the other commands work this way.

BOXES

Boxes come in handy when drawing things, so move the

cursor to one endpoint of the box and press B. You can then

use the cursor keys to change the shape and size of the box

shown on the screen. Remember, you want to Set, Reset, or

Compliment the box, or not draw it.

CIRCLES

Micro Labs tricked me on this one.   The do not allow

you to compliment circles in BASIC, so, you CAN'T compliment

circles in my program.   Anyway, put the cursor on the point

you wish to be the center of the circle. Now press C.   You

will see a small crosshair pop up.   This crosshair will be

the approximate size of your circle. Use the right and left

cursor keys (unshifted, shifted or clear) to change the size

of the crosshair and Set or Reset it, or space to skip it.

REVERSAL

You can also compliment every point on the screen by

pressing R. The entire screen is very quickly reversed in

color. If you didn't want to do that, just reverse it

again. If you want to reverse only one area, then hold on

because I will tell you how after you read about block

moves.

By Scott McBurney

FILLING

You can easily fill an area on the screen with any of

the 256 available patterns (numbered 0 through 255) by

positioning the cursor inside the area to be filled, and

pressing F.   You will be asked for the number and then it

will fill it.   If you press ENTER for the number, it won't

fill it.

Here are some handy fill values: 255 is white (solid),

170 is sort of grey, 42 is a variation of gray also, 192 is

vertical lines, 127 is horizontal lines, and 1 is a bunch of

evenly spaced dots.   You can play with it and find the

patterns you like.

BLOCK MOVES

A nice little feature is the ability to take a

rectangular area on the screen and put it at another

location on the screen, or even on a different screen.   To

get an area, put the cursor on one of the corners of it and

press G.   Does the box look familiar?   Use the cursor keys

to have the box enclose what you want to move. If you don't

want to do it, press SPACE. Otherwise, press G again to get

the block.

You can get any size block you want as long as you

don't run out of memory for it.   You can only get one block

at a time. Memory for the block is allocated dynamically so

be careful if you want to get blocks which are very large.

By Scott McBurney

By large, I mean approaching the size of the screen. You should never want to get the entire screen. That would be useless.

To put your block on the screen, move to the upper left corner of where you want it, and press P. The block is put onto the screen exactly the way it was taken off, covering what was there before.

Here is a neat trick. If you want to reverse the colors of an area on the screen, it is very easy. First, put the cursor on the upper left corner of the area. Now do a get and get the area. Next, reverse the screen, then put the area (without moving the cursor anywhere) and reverse the screen one more time.

ERASING

Say you made a mistake. You can erase things. Press E and an eraser pops up. Using the cursor keys, anything that you move the eraser over will disappear. When you are finished erasing, press enter or space and you get your cursor back. I know this isn't good for doing detailed work, but it works.

DISK COMMANDS

Pressing the D key will bring up a menu of commands. This menu will allow you to save the current screen or load a new one. If you do not specify an extension on your file

name, the program will make it /HR. You may specify any drive to save to also.

You can also get a directory of all /HR files on disks in the disk drives. This option will scan all drives for them. The normal directory option is just that. You tell it the drive number and it will show you the directory of all visible files. The other options I think are self explanatory, return to the graphics editor or quit to DOS.

HELP

Oh yes, if you have a hard time remembering these commands, press the ? key when the arrow cursor is on the screen. This will bring up a help screen which should jar your memory.

TEXT

Now we get to the good stuff. Pressing T will put you in text entry mode. Put the cursor in the upper left corner of where you want the first letter, then press T. A box will be drawn showing the area which the letter will take up. The cursor keys will move this box around, so you can offset letters. The shifted left and right arrows move the box EXACTLY one letter distance right or left. (Remember that, it comes in handy!) To enter text, just type it. If you type the wrong letter, you must either erase it later, or back up over it and type that same letter again. Pressing enter will go back to editing.

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Now we get to the best stuff! Entering text using a DotWriter font. Put the cursor in the upper left corner of where you want it, and press Y. It will ask you for the name of the font. The font must be on a disk in one of the disk drives. The program will then determine the maximum size of the letterset and draw a box of that size. Anything in this box could be overwritten when a letter is made.

You can move the box anywhere you want with the cursor keys. Typing a letter will invoke a slow process to draw that letter on the screen. Please be patient. The original routine was written in BASIC and was slow! Thanks to George Madison, it is now machine language and is much faster.

DotWriter fonts are put on the screen *proportionally* so that they look better. It took me a while to figure out how to do it, but I did get it to work. (I then found out from George Madison that there is a much easier way to do it if the letterset has been proportionalized.) You can also control the amount of space normally put between letters. To do so, press a number from 0 (zero) to 9 which will be sort of the number of dots between letters. You can only change the spacing (pressing 0 through 9) when the arrow cursor is present. You can not change it once you have started entering text.

Once again, you just press enter to stop entering text and you get the trusty arrow cursor back again. I must say,

many DotWriter fonts look very nice on the screen, and they

can really enhance drawings.

MIRROR COMMANDS

With Georde Madison writing machine language

subroutines to speed things up, I decided to become brave

and do a little machine language programming too. Two

machine language subroutines now give us a fast way to flip

the screen left and right, or top and bottom. Press M for

Mirror, then specify Left/right or Top/bottom. The screen

will be mirrored. If you want to put it back, just mirror

it again.

CONCLUSION

I hope that this program can be useful to people. I

have put a lot of work into it, especially with the

DotWriter section. As it turned out, the code to do that

isn't very long, just slow. If anyone has any questions,

comments, ideas, or whatever, I can be reached in several

ways:

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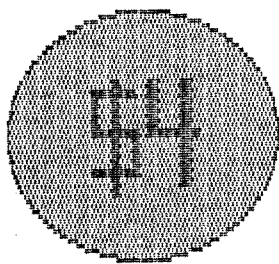
GEnie address: S.MCBURNEY
BITNET address: MSRS003@ECNCDC.BITNET
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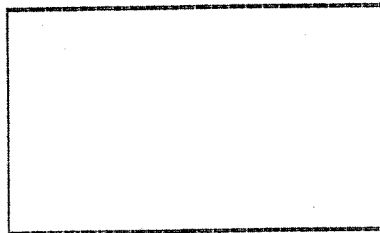
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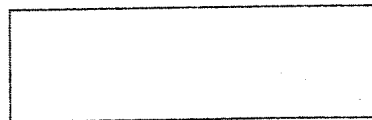**No Laughing Matter**

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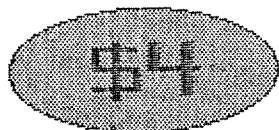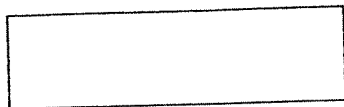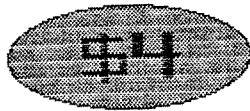
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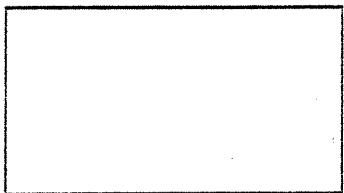**No Laughing Matter**

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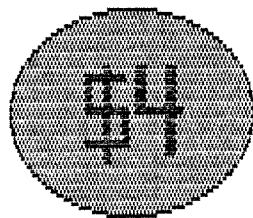All God's Children... CLOSEOUT PRICE: $4

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